Circular No. 13
18,000—April, 1917

1917

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Ontario Department of Education

REGULATIONS, INSTRUCTIONS AND COURSES OF STUDY

IN

Elementary Agriculture and Horticulture

FOR

PUBLIC AND SEPARATE SCHOOLS

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed and Published by A. T. WILGRESS, Printer to the King's Most Excellent Majesty
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WILLIAM BRIGGS
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Ministry of Education, Ontario
Historical Collection

Regulations, Instructions, and Courses of Study

IN

Elementary Agriculture and Horticulture

FOR

Public and Separate Schools

I. INTRODUCTORY

The Department of Education, co-operating with the Department of Agriculture, provides for instruction in Elementary Agriculture and Horticulture in the Public and Separate Schools.

The subject is one of the options of the courses of study in Forms III-V being intimately related to the courses in Nature Study in Forms I-IV, and the course in Elementary Science in Form V. Previous efforts to introduce it have shown that success depends very largely on a strong supporting public opinion; the work cannot be successfully carried on where the Board and the ratepayers do not believe in it or desire it. Consequently, when the work is to be undertaken it will be necessary for the Board to arrange for its introduction and support, thus sharing with the teacher the effort to insure success.

Besides the instruction in the class-room the work shall be carried on by means of home and school gardening schemes, *School Progress Clubs,* experimental and observation plots, by flower beds and borders on the school grounds, and by similar practical measures under teachers (1) with at least second class certificates, and (2) at least certificates in Elementary Agriculture and Horticulture.

NOTE 1.—School Progress Clubs are composed of pupils, ex-pupils, teachers and parents, and connect the work of the School with the interests of the home and the community. The objects of the Club are:

(1) To promote agricultural education by arranging club projects bearing directly upon the work of the laboratory and class-room. For these purposes the clubs may be organized into canning clubs, corn clubs, and the like.

(2) To improve the school grounds and to exercise some supervision over the school gardens, flower beds, gates, and fences; and to share in the management of the Arbor Day improvements.

(3) To assist in the organization and management of the School Fair, and the inspection of the home plots.

NOTE 2.—Teachers will be granted certificates in Elementary Agriculture and Horticulture upon the satisfactory completion of (1) two consecutive summer sessions at the Ontario Agricultural College and a directed winter's reading course, or (2) a course in Agriculture at a High School, followed by a course at a Normal School and one summer session at the Ontario Agricultural College. For further details see the Summer School Syllabus and the High and Continuation School Regulations.

As the instruction is based on the personal observation, investigation, and experimentation of the pupils themselves and not on lessons in a book, no text-books are prescribed. An Agricultural Bulletin Board will be found a valuable

help in the work of instruction. Specimens of weeds, clippings from papers, pictures from journals, agricultural charts, pupils' exercises, new school bulletins and announcements, reports on experiments, and other objects of interest to the whole school can in this way be readily exhibited. If a ledge is made at the bottom of the board, objects which cannot be hung up may be shown to advantage.

The work shall be under the general supervision of the Departmental Inspector of Elementary Agricultural classes. Under his supervision also shall be the work of inspection and supervision by the Public and Separate School Inspectors.

II. SPECIAL GRANTS: REGULATIONS

Grants to Boards and Teachers

1. (1) A Board that provides and maintains satisfactorily to the Minister throughout the year a course of instruction in Nature Study and in Elementary Agriculture and Horticulture shall be entitled to special grants as specified below; in no case, however, will the grant exceed the total amount expended by the Board during the year for the work.

(2) To the teacher whose work is reported as satisfactory by the Public or Separate School Inspector, the Minister will pay, in addition to the salary paid by the Board, an additional grant as specified below.

Notice to Department

2. (1) Schools intending to undertake for the first time, or to continue this work at the beginning of the school year, and thus qualify for the entire annual grants must notify to such effect the Deputy Minister through the Public or Separate School Inspector at as early a date as possible before September 10th, on the form provided by the Department. This notice shall be signed by the Secretary as well as by the teacher. Where the work is undertaken for the first time at the beginning of the calendar year the notification shall be sent in before January 10th; where at Easter, before March 10th.

Inspection by Teachers

(2) The teacher shall inspect the pupils' home gardens at least once each half year, and in the case of each pupil, he shall prepare a report to be submitted to the Inspector at his half yearly visits.

NOTE.—The visit to the pupil's home will present opportunities for talking over with the parents other matters besides Agriculture. The chief values that will come from supervision will lie in the encouragement given the pupil and the prevention of carelessness.

Provision for Teaching

3. The time allotted to the work on the time-table of the school shall be definitely stated, shall amount to at least one hour a week during the year, and shall be satisfactory to the Inspector. Additional provision for practical work may be made before or after the regular school hours or on Saturdays.

Keeping the Records

4. (1) The teachers shall keep a record from week to week on the special form provided by the Department, of the work carried on in the garden and the instruction given in the school. These records shall be inspected by the Public or Separate School Inspector on his visits to the school, and shall be forwarded by the teacher as a report to the Minister through the aforesaid Inspector. No grants will be paid to either Boards or teachers unless this report is sent in.

(2) The pupils shall keep records systematically in special agricultural note-books or garden journals of the instruction given and the practical work carried on in their school and home gardens. These records shall be submitted for the approval of the Inspector.

Keeping the Accounts

5. The accounts for the work in Agriculture shall be kept separately from the general school expenditure, and a financial statement shall be submitted, on the special form provided by the Department, by the Secretary to the Minister through the Public or Separate School Inspector at the end of the school year in June. The totals of the receipts and expenditures shall, however, also be included in the General Financial Statement of the Board to the Department of Education. No grants will be paid to a school until these reports are received.

Grants apportioned for School Year

6. These grants shall be apportioned for the school year, not as heretofore for the calendar year. In order to make the change, the grants shall be distributed for the calendar year 1917 at the close thereof and for the first half of 1918 at the close of said half. Reports shall, therefore, be required from both teachers and boards not only at the close of 1917 but also at the end of June, 1918. Thereafter reports shall be due each year at the close of the school term in June.

Amounts and Bases of Apportionment of Grants

7. (1) The grants payable to Boards and teachers of ungraded schools (schools with one teacher) and graded schools (schools with more than one teacher), with the main requirements for earning these grants, are set forth in the following schedules and regulations:—

I. SCHEDULE OF GRANTS FOR RURAL UNGRADED SCHOOLS
Forms III and IV

Requirements.	Where the teacher holds a second class certificate but is not certificated in Agriculture.				Where the teacher holds an Elementary certificate in Agriculture and Horticulture, or receives a certificate during the year.			
		To Teacher*				To Teacher*		
	To the Board*	For full year	For fall term	For winter and spring terms	To Trustees	For full year	For fall term	For winter and spring terms
A. First Plan.								
Instruction.								
Instruction throughout the whole year, to be completed satisfactorily, with requirements regarding pupils' records, teacher's report, trustees' statement, etc., fulfilled.								
Home Gardens.	Not exceeding $10.00	$15.00	$5.25	$7.50	Not exceeding $20.00	$40.00	$14.00	$21.00
Home gardens or projects by pupils of Forms III and IV supervised by the teacher.								
School Grounds.								
Well kept grass and flower plots, borders, screens, etc., at school for beautifying grounds and for instructional purposes.								
B. Second Plan.								
Instruction.								
Instruction throughout the whole year to be completed satisfactorily, with requirements regarding pupils' records, teacher's report, trustees' statement, etc., fulfilled.								
School Gardens.								
(1) A pupils' school farm or school garden at or near the school, having at least six square rods for experimental and observation plots and contributing to the School Fair.	Not exceeding $15.00	$20.00	$8.00	$10.00	Not exceeding $30.00	$50.00	$18.00	$27.00
(2) For other pupils of Forms III and IV not represented in the work on the six square rods, either additional plots in the school garden, or gardens or projects at home, supervised by the teacher.								
School Grounds.								
Well kept grass and flower plots, borders, screens, etc., for beautifying grounds and for instructional purposes.								

(1) When, with the approval of the local and the Departmental Inspector, the work begins at Easter, a proportionate amount of the grants will be paid, provided an undertaking is given by the Board that it will be continued during the year following.

(2) On the recommendation of the local inspector, approved by the Departmental Inspector, the grants to Boards and teachers in the districts and the poorer parts of the counties may, in each case, be one-half greater than those provided in the above schedule.

II. SCHEDULE OF GRANTS FOR RURAL AND URBAN GRADED SCHOOLS

Forms III and IV

Requirements.	Where the teacher is certificated in Agriculture, or receives a certificate during the year			
	To the Board.*	To the Teacher.*		
		For full year.	For fall term.	For winter and spring term.*
A. FIRST PLAN.				
Instruction.				
Instruction throughout the whole year, to be completed satisfactorily, with requirements regarding pupils' records, teacher's report, trustees' statement, etc., fulfilled.	$20.00 for each teacher not exceeding $100.00 for each School.	$40 00	$14 00	$21 00
Home Gardens.				
Home gardens or plots supervised by the teacher.				
B. SECOND PLAN.				
Instruction.				
Instruction throughout the whole year, to be completed satisfactorily, with requirements regarding pupils' records, teacher's report, trustees' statement, etc., fulfilled.	$20.00 for each teacher not exceeding $150.00 for each School.	$50 00	$18 00	$27 00
School Gardens.				
A pupils' school garden at or in connection with the school, having at least six square rods for experimental and observation plots for each class.				

* When, with the approval of the local and the Departmental Inspector, the work begins at Easter, a proportionate amount of the grants will be paid, provided an undertaking is given by the Board that it will be continued the year following.

FORM V

When a Board maintains the course prescribed for the Fifth Form, the Minister will pay, on the same conditions, the same grants as are payable for Lower School courses in agriculture and horticulture in the High and Continuation Schools. For particulars, see the Regulations of these Schools.

When also, as authorized below, pupils in Form V continue the course for Form IV with additions selected by the Principal from the course for Form V with the approval of the Inspector, the Minister may pay the teacher in addition to the grant for Form IV a grant for such work, not exceeding the fourth of the grant payable to him for Form IV, on the report and recommendation of the local Inspector approved by the Departmental Inspector of Elementary Agriculture and Horticulture.

Amounts and bases of apportionment of grants continued

(2) Where in a graded school there are two or more teachers with certificates in Agriculture, conducting classes in Forms III and IV in accordance with the regulations, the grants shall be apportioned as follows: For each of two teachers 7-eighths of that specified above for one teacher; for each of three teachers 6-eighths; for each of four teachers 5-eighths, and so on.

(3) If one qualified teacher teaches the subject in different grades in the same school, or in different schools, the grant to him shall be apportioned on the same bases as for more than one teacher in (3) above.

(4) When two or more rural schools unite to form a consolidated school the grant to the Board shall be the total amount that might have been received by the individual schools before consolidation; and the grants to the teacher or teachers, as the case may be, shall be those set forth in the schedule for graded schools.

(5) When the work is commenced under a teacher without a certificate in Agriculture and afterwards comes under the charge of a teacher with a certificate, the grant payable to the Board for that year will be that one to which it was entitled at the time the work was commenced.

Transference of Equipment

(6) When an equipment on which the Departmental grant has been paid to its full value remains unused for two years, the Minister may direct the transfer of said equipment to one of the other schools of the Province.

Contingency of grants

(7) Should the appropriation be insufficient to pay in full the sums set forth in Regulation 7 above, the Department of Education may make a *pro rata* reduction.

Uses to which grants may be applied.

8. The grants may be expended as follows: For the rental of additional land; for preparing, manuring, or fencing off the garden; for overseeing and caring for the garden through the summer holidays; for the improvement of school outbuildings or grounds by purchase of vines; for the establishment of an arboretum or for the reforestation of waste area of school property; for the purchase of a Babcock milk tester, magnifying glasses for seed studies, meteorological instruments, soil tubes or simple apparatus to be used in demonstrating features of the work; for buying tools, such as may be needed to keep up repairs of fences or garden tools, or to make simple appliances needed in the garden work; for the provision of seeds, bulbs, garden tools, tool racks, labels, garden lines, window boxes, hot beds, cold frames, grass clippers, lawn mower, etc.; for the purchase of agricultural or horticultural books and charts (not Nature Study charts), or for subscriptions to agricultural or horticultural journals for the school library.

Inspector to be consulted regarding unusual expenditures.

9. (1) Before entering upon an expenditure not authorized above, teachers and trustees shall consult the Inspector. Nothing may be purchased except that which will be put to profitable use in promoting the cause of Agriculture and Horticulture in the community through the school.

Work to be tested before heavier expenses are made.

(2) As the success of this work depends largely on popular favour, it is not desirable to incur any extensive expenditures until its permanency is assured; for example, to build an expensive fence around the garden plots or to erect a garden tool-house. At first a fence of chicken netting will suffice and the garden tools may be kept in the school.

HOME AND SCHOOL GARDENS: INSTRUCTIONS

Small established gardens do not need to be enlarged.

10. (1) As is stated in Schedules I and II, the minimum area for experimental and observational plots shall be six rods, but where the work has been already well established and is now successfully carried on in a smaller area and it is not practicable to enlarge it immediately, the area provided may be accepted for a time, on the report of the Inspector, in qualifying for the grants.

Additional land

11. (1) For the experimental and observation plots, the pupils' individual plots, or the flower pots and borders on the school grounds, the purchase of additional land may not be necessary; so long as the pupils are not deprived of adequate play-ground accommodation, the work may be conducted in the school grounds, always provided they are of at least the standard size required by the regulations. When, however, extra land is loaned, purchased or rented, it should be in the form of an addition to the school grounds or it should be within very close reach. Good work might be done in taking charge of the garden of some one living near the school, as a loan or on a rental basis.

Protection of school garden area

(2) In all cases provision shall be made for the protection of the school plots. The greatest care should be taken to prevent damage by dogs, poultry, or stray cattle; grants cannot be paid for gardens or plots which are injured through lack of care. Suitable arrangements must also be made for caring for the gardens and the school grounds in the summer vacation as well as for harvesting any crops that may then be ready.

Location of School garden.

12. The school garden should be located at the front or, preferably, the side of the school house and within full view of passers-by on the road.

Uses of area specified for school garden.

13. The six square rods specified as the minimum area for the experimental plots in a school garden qualifying for grants is exclusive of paths. As a rule three square rods should be devoted to experiments or demonstrations on field crops, and three square rods to experiments or demonstrations on vegetables, plant propagation, etc. The interests of the locality, however, will be the best guide in selecting experiments.

The space devoted to flower-growing can hardly be specified. It will be best, however, to grow the flowers in beds or borders along the walks, around the experimental plots, or about the school house and fences. In a school of twenty-five pupils, an area equal to at least one square rod should be given to flowers; but, while the war lasts, as much as possible should be devoted to plants of food value.

Smaller plots for younger pupils.

14. For the younger pupils, in either home or school garden work, small plots containing easily grown flowers or vegetables or both should be encouraged. For the older pupils there are advantages in having the work done under conditions similar to those they will meet in actual life.

School Garden should be experimental farm and beauty spot of neighbourhood.

15. In the school garden two objects should be kept clearly in view:

(1) The garden should contain from year to year a few well planned and well conducted experiments and demonstrations on fruits, vegetables, or field crops of interest and value to the whole neighbourhood.

NOTE.—This part of the garden will constitute a small "experimental farm" for every school district, full of valuable lessons in agriculture. In it the older pupils, while being trained to "do something in order that they may learn something," will be trained also to co-operate for public service. What each does will be for the benefit of all.

(2) The school grounds should contain neat grass plots, flower beds, and borders in order that children may be trained to care for tidy surroundings, to grow flowers, and to make the school premises attractive as the local "beauty spot."

Work should be consistently planned and progressive.

16. (1) The garden work should be planned to develop a consistent and progressive series of studies from year to year, and should not be allowed to become a matter of aimless repetition; pupils should advance into more difficult work just as they do in arithmetic or other school studies. School ground improvement schemes might also be planned to cover a series of years, each year adding an improved area.

(2) For the guidance of their successors teachers shall leave records of the work they have carried out.

School garden should be a Community Garden.

17. The experiments and demonstrations carried out in the garden should be made widely known throughout the neighbourhood. Garden produce should not be wasted or selfishly distributed; as a "community garden" everyone should share in its products. Plans for the garden work of the following season should be considered by the ratepayers at the Annual School Meeting. Trustees or other interested persons should be encouraged to conduct experiments in the school garden. Boys or girls who have left school also might be induced to undertake some of the experiments; in a school where there are only a few pupils in the senior classes, this plan will enable the teacher to secure help and experiments for the six square rods required.

Vegetable Garden may be planned as a Farmer's Home Garden.

18. Instead of having the pupils carry out the work in small separated plots, teachers are quite free to plan the garden along the lines of a farmer's home garden: *it is not the form or style of the garden that is of first consideration.* This plan does not prevent the pupils from making the work experimental. Everything done in the garden should have a *purpose.*

Flower growing at school as at home.

19. The aim in the flower-growing side of the garden work should be to make the school like a beautiful home. It will be best carried out in flower borders and beds suitably arranged alongside the walks, or about the school house and fences, just as it might be at the pupil's home. Work in caring for the vines and shrubbery, the hanging baskets, the window boxes, the perennial border, the wild flower plot, the lawn, the paths, the roadside in front of the school may all be considered properly a part of school garden work.

Care of grass plots part of school gardening.

20. The care of the grass plots is considered as part of the school garden work, but it is not intended that the entire school grounds should be kept by the pupils as a lawn, but rather that at the front of the school and around the flower beds and experimental plots, neat grass plots should be in evidence.

Preliminary Preparations for School Grounds improvement.

21. Before anything is done in setting out the school or home gardens or ornamental shrubbery on the school grounds, all the preliminary work of grading and draining should be completed.

NOTE.—For suggestions see the pamphlet entitled "Improvement of School Grounds," published by the Department of Education in 1908. On application the Department of Landscape Gardening of the Ontario Agricultural College, Guelph, also assists schools in this work when they have made due preparation for it by enlarging, draining, and grading the grounds.

Home Gardening Projects.

22. The work carried on by pupils at their homes need not be confined to special plots. Some may take charge of the home vegetable garden, the home flower garden, or the lawn, as their project. Chicken-raising or the care of the home flock may also be accepted. The work may also be the common undertaking of the *School Progress Club*: growing tomatoes, corn, potatoes, or oats. Some of the work, however, should be of an experimental character.

Summer Holiday care of a School Garden not a Caretaker's Job.

23. The summer holiday care of a garden must not degenerate into a caretaker's job. The garden is directly for the education of the children and indirectly for that of the people of the neighbourhood; if it has not meaning enough and educational purpose enough in it to secure voluntary good care from pupils and parents, it has no right to exist.

Such care may, however, involve some work not connected directly with the pupils' plots. For such work one or more of the pupils should be made a small allowance, but in no case should pupils be paid to look after their own plots.

What to do with unused or neglected gardens.

24. Where, for any reason, the school garden work is given up or neglected, the land should not be allowed to become an eyesore; it should be plowed down and put into grass, or loaned to someone who will keep it clean and put it to good use.

A School Progress Club may assist greatly in practical work.

25. The work carried on by the pupils in home and school gardens may be put largely under the management of the children themselves. Organized as a *School Progress Club,* they may arrange for experiments for its members, undertake a large share of the inspection of the plots, and carry out plans for papers and discussions on the work at the Friday afternoon meetings of the Club. The teacher's chief office will be to encourage and direct the work.

The continuance of the work rather than the commencement should be considered.

26. The immediate commencement of the work is not to be desired so much as a favourable commencement; it is the continuance of the work and not the commencement that should be considered chiefly; it should not be undertaken without carefully planning. It is very desirable that the teacher undertaking the work should remain throughout the year. If, however, a teacher who is leaving at Christmas knows with some certainty that the trustees and ratepayers will endeavour to have the work continued under the new teacher, there would be justification for making a beginning on the opening of the school year, but not otherwise.

Equipment required.

27. The equipment to be provided by the Board for carrying on garden work is not herein prescribed. At some schools, all the work is carried on with tools brought from the pupils' homes, and, for the first year's work, at any rate, there are some advantages in this plan. For an average school,

however, six rakes, six hoes, one digging fork, one shovel, a pronged trowel, two watering cans, a wheel barrow, one mallet, a plentiful supply of garden lines and corner stakes, a hammer and saw will likely suffice. This outfit will cost about $12.00. Grass shears, a sickle, and a lawn mower will increase this amount by about $6.00. Occasionally, a few extra tools may have to be borrowed.

The tools and other machinery should be put under the charge of one of the pupils or of a committee thereof, and such care should be considered as a part of the regular instruction.

SCHOOL FAIRS

Under Department of Agriculture

28. The School Fairs are under the charge of the Department of Agriculture through the local District Representative, where there is one in a county, and inspectors and teachers are required to co-operate with them in making the School Fairs effective as a means of education, especially by inspecting and directing such home projects as may be organized in connection therewith.

Where no District Representative

29. Where there is no District Representative in the county, the Inspectors and teachers should arrange among themselves at the Teachers' Institute, to organize the schools into School Fair Associations, and in such counties the County Councils should be asked to contribute towards the expense of management of the School Fair.

DUTIES OF INSPECTOR

30. (1) It shall be the duty of the Public or the Separate School Inspector, as the case may be, to further to the best of his ability the interests of Agricultural Training, Manual Training, and Household Science teaching by conferring with the ratepayers and the township and county councils, and, as has already been intimated by circular, it will hereafter be the duty of each Public and Separate School Inspector to inspect half yearly the teaching of Agriculture and Horticulture in the schools of his inspectorate, and to make a special report thereon to the Minister and to the School Boards, on the form supplied by the Department. This work he will perform either at his ordinary or at special visits, as he may find more convenient.

(2) In order to satisfy himself in regard to the efficiency of the home projects, whether carried on partly under the guidance of the District Representative, or wholly under the supervision of the teacher, the Inspector shall require written reports from the teacher of his or her inspection of such projects and shall examine the pupils concerning individual projects. At each inspection he shall also see that the garden tools are properly cared for, and that the equipment has adequate store-room. He shall also examine teacher's records of the work done and shall endorse them as satisfactory when the details required by the Department are properly given, in order that the various requirements for earning grants may be checked over later at the Department.

(3) Much of the success of the classes in Agriculture will depend upon the attitude of the Inspector. Where school gardens are carried on, the Inspector will visit them during the growing season. Of course, if every school had a garden this would not be possible. At all events, where the work is beginning it would be wise to keep in close touch with the teacher and his school until it has become established. Where a garden has made a good start and the school is in charge of a capable teacher, one visit might be made during the growing season, and the other during the winter time. This phase of the problem may indeed be provided for, even if the number of schools should increase considerably.

COURSES OF STUDY

31. The following are the courses of study for each Form, including suitable topics for each of the months; the study of these topics need not, however, be confined to the month specified:

FORM III

AGRICULTURE AND HORTICULTURE.—*The Farm.*—Maps of home farms, with cropping plans for rotation of crops.

Breeds of farm animals.
Germination tests of farm seeds.
Simple classification of soils.
Seasonal studies of farm employments.
Problems in arithmetic relating to the farm.

The Garden.—Growing bulbs for winter and spring bloom.
Growing common vegetables and flowers.
Experiments and demonstrations with vegetables in the school garden.
Hot bed and cold frame.
Poisonous forms of mushrooms.

The Orchard.—Surveys of fruit-growing in locality.
Study of fruit-tree twigs.
How to plant trees and set out an orchard.
How to prune old trees and renovate orchards.

The School.—Beautifying the school grounds and the roadside in front.

School Progress Clubs.—Organization and maintenance.

Monthly Topics for Form III

SEPTEMBER

The flower of sweet pea and red clover; weeds, recognition of the commoner forms in the locality; agricultural products (native).
The house-fly and potato beetle as pests.

OCTOBER

Weeds, further study and collection; fruit judging; mushrooms, characteristic features of the poisonous forms.

NOVEMBER.

Agricultural products (introduced), a comparison of foreign with the native; pruning of fruit trees.
Poultry equipment; moulting fowl.

DECEMBER.

Farm problems, including areas of school gardens from plans, practical problems.

January

Breeds of Farm animals: dairy and beef breeds of cattle; heavy and light horses; long, medium and fine-woolled sheep; bacon hogs and fat hogs.

Germination of weed-seed collected the fall before so as to recognize the seedlings.

February

Germination tests of grains.

Study of twigs of fruit trees: fruit buds, leaf buds, scale insects.

March

Hot beds: structure, use and management.

Germination tests of grains: corn, oats, clover.

Preparation for school garden.

April

School gardens: plans and arrangements; preparation for intensive garden; cold frame, structure, use and management.

Treatment of oats for smut.

May

Definite plan for the school garden; planting, Arbor Day improvements; tree planting; shrub planting.

Incubator.

June

Care of school gardens; comparative study of the structure of the flowers of apple, pear, strawberry; soil cultivation; transplanting.

FORM IV

Agriculture and Horticulture.—*The Farm.*—Weed seed impurities.

Structure of common grains and heads of wheat, oats, barley, corn.

Milk testing.

Drainage principles and plans.

Farm buildings and machinery.

Rotation of crops.

Growing improved oats, barley, alfalfa or corn.

Improving poultry.

Problems in arithmetic relating to the farm.

The Garden.—Structure of the flowers of the pea, bean, and pumpkin.

Window boxes and flower beds at school.

Making a hot-bed, cold frame.

Intensive gardening in the home or school garden or both.

Experiments and demonstrations with grains and roots in the school garden.

The Orchard.—Grafting.

Fruit blossoms and formation of fruit.

Care of an orchard; insects injurious to fruit trees and their treatment; treatment for fungus diseases.

Methods of packing and shipping fruit.

The School.—Beautifying the school grounds and the roadside in front.

School Progress Clubs.—Organization and maintenance.

Monthly Topics for Form IV

September

Corn judging, practical lessons with ear corn and shelled corn.

Soil studies, classes of soils, effect of lime on clay, acid and alkaline soil, muck, loam.

October

Potato judging, study of the potato, treatment for scab, the potato beetle.

November

Fruit judging: apples, pears; packing fruit in boxes and barrels.

Poultry: the Mediterranean, Asiatic and American breeds, care of poultry, handling, packing and care of eggs.

December

Farm arithmetic, including mensuration of silos and the like.

Care of poultry and treatment for parasites, candling of eggs.

January

Grain judging; seed selection: wheat, oats, barley; testing seed, especially corn, for vitality.

February

Care of milk, milk utensils, the Babcock test for fat, simple tests for casein and albumen; butter, buttermaking.

The use and composition of fertilizers.

March

Preparation for planting the school garden; hot beds; selection of scions for grafting; pruning; spray mixtures; spray calendar.

April

School garden plans for plots, intensive garden explained and arranged for; cold frames; starting seeds in cold frames; treatment of oats for smut.

May

School garden work, planting seeds; Arbor Day improvements, tree-planting, shrub planting; incubator.

June

School garden work continued, planting and transplanting.
Study of the general structure of the flowers of the apple, pear, strawberry.
Study of soil, cultivation in the garden.

FORM V

In their present condition, few of the schools can take up the courses in Agriculture and Horticulture as prescribed for Form V. Accordingly, in schools which have a Fifth Form but which are unable to maintain all these courses, the pupils of such form may continue the courses prescribed for Form IV, with such topics of the courses for Form V as the Principal may select, with the Inspector's approval.

Agriculture and Horticulture.—An elementary practical course:

Junior Grade: Botany, Physics, Gardening, Fruit-growing, Bee-keeping, Agricultural Arithmetic, Poultry, Dairying, Horticulture, Soil Studies, Insects.

Senior Grade: Botany, Physics, Chemistry, Gardening, Fruit-Growing, Farm Crops, Bee-keeping, Dairying, Horticulture, Insects, Bacteriology, Farm Animals, Rural Economics.

Monthly Topics for Form V

Junior Grade

September

Physics: Measurements of fields and surveys for drainage; needs, value, and methods of drainage.

Gardening: Selection, purchase and outdoor planting of bulbs; methods of potting and forcing bulbs for winter bloom.

October

Plant Studies: Field studies of weeds; habits of growth and seed distribution; methods of eradication.

Fruit Growing: Fall management of orchards, pruning and cultivation; methods and systems of fruit packing; work of co-operative fruit associations; law relating to fruit marking, etc.

Beekeeping: Management of bees in fall and winter.

November

Poultry: Housing, feeding and management of poultry in winter; fattening and marketing; breeds.

Horticulture: Cutting scions from fruit trees to store for root-grafting in winter. Planting apple seeds for production of seedlings.

December

Chemistry: Simple study of plant substances, such as determination of moisture, carbon, ash, starch, and gluten; simple studies of soils, insecticides, fungicides, and common substances used on the farm.

School Meeting: Public meeting at school at which reports on work done will be given and prizes distributed.

January

Dairying: Milk testing with Babcock tester; care of milk and pasteurization; use of lactometer; individual cow records; care of dairy herd; construction of dairy stables.

February

Botany: Determination of weed seed impurities in clover seed, etc.; germination tests of farm and garden seeds; Seed Control Act; methods of combating weeds.

March

Soil Studies: Simple physical analyses of different classes; comparisons by weight; determination of air and water capacities, capillarity; effects of frost, lime, and humus on clay.

Gardening: Preparation, care and uses of hot bed and cold frame; methods of growing potatoes, onions, rhubarb, lettuce, cabbage, tomatoes, etc., for early crops; small fruit culture; methods of growing strawberries, raspberries, currants, grapes, etc.

April

Poultry: Incubation, brooding and rearing of chicks; management of poultry in summer.

Gardening: Beautifying of home surroundings; plans for home gardens; preparation of soil; selection of varieties; planting tables; care of growing plants.

May

Garden Work: Preparation and planting of experimental and demonstration plots in school garden; work in home gardens.

Beekeeping: Colony studies to learn organization, life histories and work of bees; construction of hives; methods of handling.

Botany: Study of flowers of fruit trees, the setting and development of fruit; natural and artificial fertilization; flowers and seed-development of forest and shade trees.

June

Insects: Recognition, life histories, remedies for insects injurious to orchard and garden; spraying mixtures and application.

Botany: Study of economic plants, such as grasses, ornamental shrubbery, garden flowers.

Crop Improvement: Plans for selecting choicest seed of grains, vegetables or flowers for next year's growing; work of Canadian Seed Growers' Association.

Senior Grade

September

Gardening: Storing vegetables, fruits and house plants for winter; methods of winter forcing of rhubarb, swiss chard; preparation and seeding for early spring crops.

Bacteriology: Moulds and bacteria in relation to canning and preserving; methods of canning; work of bacteria in soil; legume bacteria.

October

School Exhibit: Exhibition of pupils' and school's work at school or local fair.
Horticulture: Preparation for winter of tender climbing plants, shrubs and flowers; lifting, dividing and replanting perennials.

Home Projects: Reports on home gardening projects and summarizing results.

November

Farm Animals: Breeds of cows, horses, sheep and swine; practice in using score cards; telling of age of horses by teeth; care and management of farm animals; construction of stables.

December

Agricultural Arithmetic: Estimating of holding capacities of mows, bins, wagon boxes, silos, cisterns, wells, troughs, barrels, milk utensils; estimates of weights of hay loads, stacks, manure piles; estimate of sand, cement, lime, brick, stone or lumber required in building barns, sheds, silos, etc.

Rural Economics: Laws relating to agriculture; organizations for advancing agriculture; co-operative associations; value of good roads; rural advancement, etc.

January

Dairying: Simple analysis of milk to show albumin, casein and sugar; composition and value of whey and buttermilk; experiments to show effects of bacterial or mould contamination; construction, care and advantages of cream separator; manufacture of butter and cheese; dairy manufacturing; visit to creamery or evaporator.

February

Farm Crops: Kinds of farming and the best kinds for the neighbourhood; crops best suited to locality and best varieties of grains; methods of crop improvement; systems of rotations and values; plans for model farms.

March

Physics: Principles of farm machines or appliances; simple experiments with pulleys, levers, etc.

Chemistry: Use of manures and fertilizers; examination, identification and simple tests for common commercial fertilizers; calculation of values and proportions in which to be mixed.

April

Fruit Growing: Selection of location and planting plans for orchards; varieties suited to local planting; orchard management and care; methods of pruning and grafting.

Agriculture: Methods of soil cultivation; best times and methods of seeding. Farm management: care of machinery, costs of manuring, soil preparation, seeding, harvesting, threshing and marketing.

May

Garden Work: Work in home gardens or school plots.
Botany: First year's work continued.
Beekeeping: First year's work continued.

June

Insects: First year's work continued.
Botany: First year's work continued with study of common plant diseases and treatment for them.
Horticulture: Methods of budding and propagation by cuttings.

HOME PROJECTS

32. The following list of home projects should form the basis of a selection suitable to the individual pupils of Form V. They are intended to be suggestive, and other suitable projects may be selected to suit the needs of the locality, subject to the approval of the Inspector:

GARDENING.—(1) To take charge of the home vegetable garden or part of it.

(2) To establish, improve, or care for the home lawn.

(3) To grow for canning one or more vegetables, such as tomatoes, beets, corn, beans.

(4) To grow one flower and one vegetable in a pupils' competition.

(5) To set out and care for a strawberry, raspberry, or asparagus bed.

(6) To set out and care for a row of currants or gooseberries.

(7) To establish a perennial flower border.

(8) To set out and train climbing rose, Boston ivy, or other climbers.

(9) To test two varieties of a vegetable.

(10) To grow new kinds of vegetables.

(11) To improve the back yard with grass plots, flower borders, and climbers on the fences.

(12) To establish a wild flower garden at home.

FRUIT GROWING, NURSERY WORK, ETC.—(1) To renovate an old orchard, or part of it.

(2) To set out and care for one or more fruit trees or grapevines.

(3) To care for one or more trees by pruning, spraying, and cultivating.

(4) To experiment on thinning out fruit on heavily bearing trees.

(5) To produce one's own nursery stock of fruit trees by raising seedlings and grafting on the roots or by budding.

(6) To propagate currants, gooseberries and grape vines from cuttings.

(7) To raise shade trees from seeds or nuts, e.g., horse-chestnuts, oaks, hickories, walnuts, maples, elms.

(8) To propagate ornamental shrubbery, such as privet, bush hydrangea, roses, etc., from cuttings.

(9) To buy ornamental shrubbery of one-year stock and care for it on nursery lines until it may be large enough to set out.

(10) To get young evergreen or other tree seedlings from the woods and to prepare them on nursery lines for home planting.

(11) To get a colony of bees and learn to handle it.

PRODUCTION OF FIELD CROPS, HOME GROWN SEED, ETC.—(1) To compare thick and thin seeding of some common field crop.

(2) To compare results from different dates of seeding.

(3) To compare yields from same weights of large and small seed.

(4) To compare yields resulting with different depths or different number of times of cultivation, say of corn.

(5) To compare yields resulting from uses of different mixtures of commercial fertilizers.

(6) To produce one's own mangel, turnip, or carrot seed.

(7) To test and introduce a new variety of grain, alfalfa, clover, potato or other crop, such as recommended by the experimental stations.

(8) To enter local competition in obtaining the best yields from one-tenth acre of corn, potatoes, turnips, etc.

Live-stock Improvement.—(1) To secure eggs of some improved strain of poultry (e.g., O.A.C. Barred Rocks) and build up a pure flock.

(2) To make individual milk tests for the home dairy herd in order to find out which cows are most profitable.

(3) To undertake a feeding experiment in the production of "baby beef" or of bacon hogs, as arranged by the District Agricultural Representative for the members of his Young Farmers' Improvement Club.

(4) To establish and care for or to improve a flock of sheep.

(5) To establish and care for an apiary.

Crop Improvement.—(1) To join the Canadian Seed Growers' Association, and to carry on practical seed selection and improvement.

(2) To enter one of the Field Crop Competitions organized by the Ontario Department of Agriculture.

(3) To undertake one of the experiments offered by the Experimental Union, comparing approved varieties of oats, barley, potatoes, etc.

(4) To commence the selection of the best hills of potatoes, best head of corn, best heads of oats and grow crops from these.

(5) To purchase, plant, and care for choice seed from a leading seed grower for comparing with home-grown seed.

Farm Management and Improvement.—(1) To make a complete valuation of the farm and all its equipment, buildings, fences, drains, machinery, live stock, feed, fields and orchards.

(2) To estimate the cost of producing the different crops grown, keeping accounts for each field.

(3) To estimate the cost of raising pigs, chickens, cattle, sheep or horses.

(4) To estimate the cost of producing milk and butter.

(5) To carry out a system of book-keeping for the farm for a year.

(6) To make a drainage survey of the farm with map showing location of old drains and new drains required.

(7) To test a scheme of cultivation for the eradication of weed pests in a field.

(8) To use split-log drag for improvement of roads about and on the farm.

(9) To make a survey of the home woods, estimating the amount of mature or spoiling wood available for lumber or fire wood and making plans for restoration or improvement.

(10) To conduct an experiment to find the results of following a system of rotation.

EQUIPMENT

REFERENCE LIBRARY

33. The books marked with an asterisk are especially suitable and should be on the shelves of every rural school. Others may be added from time to time as may be needed. Pupils should be encouraged to take the books home for the use of other members of the family.

While no text-books are prescribed, pupils should be trained to read for themselves agricultural topics, bulletins and journals, and to use them in connection with their class studies, debates, and experiments. The agricultural books should be kept not behind locked doors, but on a special shelf where pupils may have ready access to them.

General Agriculture.

Title.	Author.	Probable price.
*Elements of Agriculture	Warren	$1 10
*Agriculture for Beginners	Burkett, Stevens & Hill	75
*Essentials of Agriculture	Waters	1 25
Rural Arithmetic	Calfee	30
Soil	King	1 50
Soil	Hall	1 50
Beginnings in Agriculture	Mann	75
Farm Management	Warren	1 75
One Hundred Lessons in Agriculture	Nolan	65
First Principles of Agriculture	Goff & Mayne	80
Agriculture for Young Folks	Wilson	80
High School Agriculture	Mayne & Hatch	1 00
Elementary Principles of Agriculture	Ferguson & Lewis	1 00
Principles of Agriculture	Bailey	1 25
Fundamentals of Agriculture	Halligan	1 20
Productive Farming	Davis	1 00
Elements of Farm Practice	Wilson	75
Practical Lessons in Agriculture	Lester S. Ivins	84
Laboratory Manual of Horticulture	George H. Hood	60
Agriculture and Life	Cromwell, A. D.	1 50
Agriculture Through the Laboratory and School Garden	Jackson, C. R., and Daugherty, L. S.	1 50
Agriculture Through Home and School Garden	Stebbins, C. A.	1 00
Elementary Exercises in Agriculture	Dadisman	50
An Introduction to Agriculture	Upham	75
Elementary Agriculture	Hatch & Hazlewood	75
Elementary Agriculture for Schools	McCaig	1 00
Practical Lessons in Agriculture	Ivins and Merrill	75

Agricultural Botany.

Agricultural Botany	Percival	2 50
The Living Plant	Ganong	3 50
Mushrooms	Atkinson	3 50
Field, Forest and Garden Botany	Gray	1 80
Text Book of Botany	Strasburger	5 00
The Evolution of Our Native Fruits	Bailey	2 00
Plant Breeding	Bailey	2 00
Fodder and Pasture Plants	Dept. Agriculture, Ottawa	75
*Farm Weeds	Dept. Agriculture, Ottawa	1 00
Our Native Trees	Keeler	2 00

Bacteriology and Health.

Bacteria in Relation to Country Life	Lipman	1 50
Microbiology	Marshall	2 50
*Bacteria, Yeasts and Molds in the Home	Conn	1 00

Beekeeping.

Title.	Author.	Probable price.
Beekeeping	Philips	1 50
How to Keep Bees for Profit	Lyon	1 50
Writings on Bees	Alexander	50
The A, B, C, and X, Y, Z of Bee Culture	Root	1 75

Dairying.

Milk and Its Products: A Treatise Upon the Nature and Qualities of Dairy Milk and the Manufacture of Butter and Cheese	Wing, H. H.	1 50
Dairy Cattle and Milk Production	Eckles, C. H.	1 60
The Farm and Dairy	Sheldon, J. P.	1 00
*Canadian Dairying	Dean	90
First Lesson in Dairying	VanNorman	50
Questions and Answers in Butter Making	Publow	50
Farm Dairying	Laura Rose	1 25
Testing Milk and Its Product	Farrington and Woll	1 25

Entomology.

Elementary Entomology	Sanderson and Jackson	2 00
Insect Life	Comstock	1 75
How to Know the Butterflies	Comstock	2 25
Manual for Study of Insects	Comstock	3 50
*Insect Pests of Farm, Garden and Orchard	Sanderson	3 00

Farm Animals.

Manual of Farm Animals	Harper, M. W.	2 00
The Training and Breaking of Horses	Harper, M. W.	1 75
Sheep Farming in North America	Craig and Marshall	1 50
*Types and Breeds of Farm Animals	Plumb	2 00
Swine	Day	1 50
The Horse	Gay	1 50
Judging Live Stock	Craig	1 50

Flowers and Ornamental Plants.

Flowers and How to Grow Them	Rexford	50
Book of the Rose	Mellier	1 75
Daffodils and Narcissus and How to Grow Them	Kerley	1 10
Flower Garden	Bennett	1 10
Home Horticulture	Rexford	1 00
Vines and How to Grow Them	McCullen	1 10
Flower Guide	Reed	68

Horticulture.

*Principles of Fruit-growing	Bailey	1 75
Productive Orcharding	Sears	1 50
Systematic Pomology	Waugh	1 00
The Apple	Wilkinson	1 10
Plums and Plum Culture	Waugh	1 50
Bush Fruits	Card	1 50
The Strawberry in North America	Fletcher	1 75

Nature Study.

Public School Manual		19
Nature Study and Life	Hodge	1 50
How to Teach Nature Study	Dearness	60
Nature Study	Silcox and Stevenson	75
Nature Study and the Child	Scott	1 50
Practical Nature Study	Coulter	75
Birds, Bees and Sharp Eyes	Morley, M. W.	60

Title.	Author.	Probable price.
Insect Book	L. O. Howard	2 50
Moths and Butterflies	Dickerson, Mary C.	1 80
Plant Life, First Studies of	Atkinson	60
Stars, The Story Land of	Pratt, Mara L.	50
Sylvan Ontario	Muldrew	25
Winter Sunshine	Burroughs	50
Principles of Plant Culture	Goff, E. S.	1 10
Elementary Agriculture and Nature Study	Brittain	75
Bird Neighbors Blanchan	Doubleday	3 00
New Canadian Bird Book	MacClement	2 50
Hand Book of Nature Study	Mrs. Comstock	3 00
Nature Study and Elementary Agriculture	Hamilton, McGill (Univ.)	50
Poultry.		
How to Keep Hens for Profit	Valentine	1 50
*Poultry Craft	Robinson	1 25
American Standard of Perfection	Am. Poultry Assoc.	2 00
Productive Poultry Husbandry	Lewis	2 00
Rural Economics.		
Challenge of the Country	Fiske	75
Rural Life in Canada	McDougall	1 00
Principles of Rural Economics	Carver	1 30
Co-operation in Agriculture	Powell	1 50
An Introduction to the Study of Agricultural Economics	Taylor	1 25
Special Crops.		
Alfalfa	Coburn	50
Bean Culture	Sevey	50
A B C of Potato Culture	Terry	50
Cabbages, Cauliflowers and Allied Vegetables	Allen	50
Celery Culture	Beatty	50
Mushrooms and How to Grow Them	Falconer	1 00
New Onion Culture	Grainer	50
Tomato Culture	Tracy	50
Soils and Fertility.		
The Fertility of the Land	Roberts, I. P.	1 50
The Principles of Soil Management	Lyon, T. L.	1 75
The Soil: Its Nature, Relations, and Fundamental Principles of Management	King, F. H.	1 50
*Fertilizers: The Source, Character and Composition of Natural, Home-made and Manufactured Fertilizers, and Suggestions as to Their Use for Different Crops and Conditions	Voorhees	1 25
Manures and Fertilizers	Wheeler, H. J.	1 60
Soils and Fertilizers	Snyder, H.	1 25
Rocks, Rock-weathering and Soils	Merrill, G. P.	4 00
Crops and Methods for Soil Improvement	Agee, Alva	1 25
Soils and Plant Life	Cunningham	1 10
School Gardens.		
*School Gardens	Meier	30
Practical School Gardens	Elford	70
Among School Gardens	Greene	1 25
How to Make School Gardens	Hemening	1 00
Children's Gardens for Pleasure, etc.	Sturgis & Walton	1 00
Public School Garden Book	Weed	1 25
Gardens and Their Meaning	Wright	1 00

Title.	Author.	Probable price.
Vegetable Gardening	Watts	1 75
*Manual of Gardening	Bailey	2 00
Vegetable Gardening	Green	1 00
Garden Farming	Corbett	2 00
Landscape Gardening	Waugh	1 00
The Principles of Vegetable Gardening	Bailey, L. H.	1 50
The Beginner's Garden Book	French, Allen	1 00
School and Home Gardens	Meier, W. H. D.	80

APPARATUS

34. The following list of apparatus is recommended as suitable for elementary classes in Agriculture and is intended to be suggestive:

General

	(Price estimated.)
Three small glass funnels	$0 30
One half dozen glass tumblers	30
One half dozen glass fruit jars (sealers)	40
One dozen large test tubes (1 in. by 6 in.)	30
Measuring cylinder (graduate) 100 c.c.	75
Hydrometer, Baumé (for heavy liquids	1 00
Hydrometer jar	45
Spirit lamp (with wood alcohol)	40
Thermometer, chemical, both C and F. (2 at 30c.)	60
Small bottle of hydrochloric acid	15
Small bottle of iodine (in K I)	15
Two litmus pads at 5c.	10
The following, dry, in large mouthed, cork stoppered bottles:—	
Sodium nitrate, calcium phosphate, potassium chloride (or sulphate), copper sulphate, washing soda, baking soda, starch, lime, sulphur, 10 cents each	90
Filter paper	10
Soup plates and saucers, a dozen each	60
Flower pots, 3 dozen 4 in.	1 08
Flats (boxes for planting seed)	20
Apple box to demonstrate packing	20
Surveyor's chain	2 50
Rain gauge	2 00
Garden tools as may be needed.	

Special

For special purposes, selections from the following may be made: (The teacher should write to a dealer for prices.)

For Poultry—
- Model of feed hopper.
- Trap nest.
- Model of hen or chicken coop.
- Incubator (may be borrowed).

For Beekeeping—
- Standard Langstroth hive, complete.
- Smoker.
- Colony of bees in 10-frame hive.

For Field Crops—
- Set of grain measures.
- Machine for treating grain for smut.
- Samples of grains—wheat, rye, barley, buckwheat, rice in the hull, oats, etc.
- Fertilizers.
- Weed seeds.

Horticulture—
- Pruning and grafting tools.
- Hand spraying outfit.
- Hot bed (may be built permanently).
- Cold frame.
- Combined wheel cultivator and seeder.

For Dairying—
- Lactometer.
- Babcock milk tester.
- Milk scales.
- Milk pail (modern).
- Butter utensils, for illustration.

Repeal of Regulations

35. All former Regulations of the Department of Education that are inconsistent with the foregoing Regulations, 1-34, are hereby repealed.